DOCUMENT RESUME

ED 304 876 FL 017 828

AUTHOR Birdsong, David
TITLE On the Instability of Grammaticality Judgments.
PUB DATE Dec 88
NOTE 13p.; Paper presented at the Annual Meeting of the American Association for Applied Linguistics (New Orleans, LA, December 27-30, 1988).
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Classification; *Grammar; *Grammatical Acceptability; Language Research; *Linguistic Theory; Research Methodology; *Structural Analysis (Linguistics)
IDENTIFIERS *Metalinguistics

ABSTRACT

In response to problems in classifying grammaticality judgments in linguistic theory, a psychological model of speakers' performance on grammaticality judgment tasks is presented. The model departs significantly from notions of metalinguistic performance outlined in previous research, and is derived principally from recent work in category theory. A distinction is made between categorical knowledge and certain ad hoc and contextually variable concepts used to represent such presumed knowledge. Particular emphasis is placed on accounting for the instability of grammatical judgments, even in a single individual. The arguments and evidence are presented as tentative and preliminary in the search for a coherent picture of performance on grammaticality judgment tasks and of the relationship of this performance to linguistic knowledge. (MSE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED304876

ON THE INSTABILITY OF GRAMMATICALITY JUDGMENTS

AAAL, 1988 December
David Birdsong
University of Florida

The pros and cons of using linguistic intuitions as a data base for theory have been argued for decades. Early participants in this debate included such luminaries as Hill (1961), Chomsky (1964, 1965), Labov (1975), and Bolinger (1968). More recently, the pros have been presented admirably by Newmeyer (1983). The cons on the other hand are most saliently illustrated by the fact that two years ago the editors of *Linguistic Inquiry* declared a moratorium on papers on the so-called "contraction" debate, in part because the principals couldn't agree on whether sentences like (1) on your handout (*Who do you wanna do it?*) are grammatical or not. [that is, whether *want to* could be contracted to *wanna* in such contexts]

At the root of the debate is the seeming capriciousness of grammaticality judgments. Not only do speakers routinely not agree, it is frequently the case that individuals' judgments of sentence grammaticality can vary from one elicitation to the next. For example, in a recent experimental study, Nagata (1988) found that grammaticality judgments for isolated sentences tend to change when subjects are asked to repeat them or to embed them in realistic contexts. Nagata has also documented variable effects of context on the rating of grammatical versus ungrammatical strings. Among other studies which attest to intra-subject inconsistency or instability are Carden 1970; Snow & Meijer, 1977; Birdsong, (1989) [see also Carroll, Bever & Pollack, 1981, for demonstration of instability on a different metalinguistic task])

In the face of such phenomena, many mainstream generative linguists have aligned themselves with psychologists and have concluded, to quote Lasnik (1981), who paraphrases Peters and Ritchie (1973), that "grammaticality judgments are often incorrectly considered as direct reflections of [linguistic] competence. ... responding to a grammaticality query is an instance of [meta]linguistic performance (p. 20). (brackets mine; italics Lasnik's). [this quote is given in (2) on the handout]

In relegating grammaticality judgments to the realm of performance, theorists acknowledge how dirty the data are. What if anything can be done with these data is the next question. If they are to be used, even peripherally, to inform theory, then it behooves us to follow the urgings of Carroll, Bever & Pollack (1981), Levelt (1974), and others and try to understand more about the psychology of this type of metalinguistic

FL017828

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
BIRDSONG
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

performance. In other words, if grammaticality judgments are not simply mirrors of linguistic knowledge, what are they?

In the present paper, I pursue a tentative and partial answer to this question. To that end, I will outline elements of a psychological model of speakers' performance on grammaticality judgment tasks. This model, which departs in significant ways from notions of metalinguistic performance outlined in Bialystok & Ryan (1985) Newmeyer (1983), and Birdsong (1989), is derived principally from recent work in category theory by Barsalou (1987). A distinction will be made between categorical knowledge and certain ad hoc and contextually-variable concepts which people use to represent such presumed knowledge. Particular emphasis will be placed on accounting for the frequently-attested instability of grammaticality judgments. The arguments and evidence to be presented should be considered as initial gropings toward an eventual coherent picture of performance on grammaticality judgment tasks, and of the relationship of this performance to linguistic knowledge.

I would like to start by introducing the main features of Barsalou's theory of categorization. Although I won't be able to get into the subtleties of the model, those of you who are familiar with George Lakoff's work will perceive areas of overlap with and divergence from Barsalou's thinking. This is not the proper time to compare the two; instead I refer interested members of the audience to a collection of papers edited by Neisser (1987), in particular the chapters by Lakoff, Barsalou, and McCauley. (All these references are given in the bibiography on your handout.) As a further note of clarification, I would like to point out that Barsalou and I diverge in our relative emphases, as well as in our articulation of certain theoretical details; I apologize in advance if time constraints prevent me from specifying all such divergences. Again, I urge those of you who are interested to read the Barsalou, Lakoff, and McCauley papers to get a sense of these thinkers' contributions to the model I discuss today.

First, a bit of terminology. Barsalou makes a critical distinction between category and concept. Categories are cognitive structures which may have either finite or infinite membership or exemplars. Some categories may be formal (e.g., ODD NUMBERS, SQUARES), while others may be goal-derived (e.g., THINGS TO TAKE ON A CAMPING TRIP). Still others may not be established in memory, and indeed are rarely if ever thought about. Barsalou has shown empirically, for example, that people are able to create and manipulate such categories as WAYS TO ESCAPE BEING KILLED BY THE MAFIA and THINGS THAT COULD FALL ON YOUR HEAD. Categories typically display gradedness or

prototype effects, such that some members of a category are perceived in performance contexts as better exemplars of that category than others. Barsalou, like Lakoff and Rosch, insists that the graded structure of categories is a behavioral effect, i.e., how people in performance situations order exemplars in categories according to typicality or goodness-of-example. In this regard I direct your attention to (3) which is something of a synthesis of conclusions by Rosch, Lakoff, and Barsalou:

"Behavioral effects are not to be interpreted as a direct reflection of cognitive structure (in this case, category membership). Categories are NOT represented in the mind in terms of prototypes or best examples..Prototype effects are evidence that subjects can judge degree of prototypicality, not evidence of mental representation of categories"

Thus, for example, the finding of Armstrong, Gleitman & Gleitman (1983) that subjects consider 703 not as good an exemplar of the category odd number as 9 is not to be taken to mean that the nominal or binary category "odd number" is represented cognitively as scalar or graded.

In the Barsalou scheme, a concept is invoked or constructed to index (or, in Barsalou's terminology, *represent*) a category. Thus, having wings is a concept that represents the category of BIRD. Barsalou rejects the classical association of concepts with defining properties, distinctive features, or criteria for membership. Instead, the term concept refers to particular information used to represent a category on a particular occasion. That is, concepts are not necessarily invariant or stable. More precisely, the concept contains information that provides relevant expectations about the category in a given context as well as information about that category in most contexts. [examples to follow] Among Barsalou's reasons for characterizing concept in this way is the fact that defining properties for categories are often not available. Take for example the category of MOTHER. In these days of adoption, surrogate motherhood, test-tube conception, and so forth, facile concepts of motherhood are inadequate. The concept "birth-giver" doesn't always work, because there are adoptive and foster mothers. Even "female" fails as an invariant concept since there are females who have given birth and have since had a sex-change operation. (More on this, if you're interested, in Lakoff, and with a different theoretical spin). And even when criterial definitions for categories do exist, Barsalou argues on the basis of empirical evidence that such definitions do not always operate in all people's representations of categories. To illustrate his point, Barsalou cites the category ANIMAL, as seen through the eyes of housewives and rednecks (by the way, the

possibly offensive stereotypes are Barsalou's) Barsalou argues that the housewife point of view may generate a concept for animals that includes information about animals being small and domesticated. The redneck on the other hand might use a concept that includes information about animals being large and/or wild. Thus, a Pekingese may be judged more animal-like by a housewife, but judged a poorer exemplar of the category ANIMAL by the redneck. The variability of concepts is also documented in a variety of ad hoc and context-dependent behaviors. For example, Barsalou notes that the concept "floating" is not normally associated with the category BASKETBALL. However, when subjects are told that someone in a boating accident used a basketball as a life preserver, the concept "floating" becomes activated as a concept.

With these metacognitive behaviors, there are abundant parallels in judgments of sentence grammaticality. We've probably all been in heated discussions where assessments of grammaticality by theoretical fiat are challenged by skeptics who are able to concoct a shaggy-dog story, the conclusion of which is a nominally starred sentence which, embedded within rich layers of context, is now unobjectionable As McCawley (1985 -with a "w") points out, linguists who offer their intuitions often are not grappling so much with questions of grammaticality but rather reporting their success in imagining a context where the sentence in question would sound OK. For example, sentences like (4) *I shaved me* are ungrammatical, as binding principles make the *-self* affix obligatory. However, Bolinger (1968) notes a context where *-self* is not obligatory, and indeed is prohibited. In a 1959 movie called "Rally 'round the flag, boys", the main character, who has just spilled perfume on himself, is told by another character "I don't see how you can resist you." [(5) on the handout] Bolinger explains that the reflexive construction not only means "X operates on X", but that it also implies that X must be interpreted as an indissoluble entity. If for some reason a speaker wants to suggest a dissociation of an entity from itself, this can be done merely by avoiding the reflexive marker. Clearly, for certain discourse purposes,the putatively obligatory or nominally "grammatical" construction is not.

Grammaticality judgments may be unstable because of this type of consideration and numerous others. As a common example, an individual may reject sentences like (6), with stranded prepositions and improper case marking, on one occasion and accept them on the next, depending on how prescriptivist one's current concepts which represent the category of well-formedness.

I would now like to flesh out these skeletal and anecdotal observations in a somewhat more formal fashion. In (7, 8, & 9) on the handout, I summarize and schematize with a few salient examples from both "real-world" and linguistic domains the elements of categorization and concept formation and application that I've been discussing. I'll walk us through these examples in turn.

[these are my examples, not Barsalou's]

In (7), the category BIRD is instantiated by a subordinate category, "swallow". Ordinarily, we bring to a category what are typically considered criterial or defining features. In the case of this subcategory, e.g., "winged animal" and "belonging to the Hirundinidae family". We may also summon a variable concept, here, "capable of flight". This concept is of necessity variable, since would apply to the (sub)category *swallow*, but not to the (sub)category *penguin*. With these and possibly other concepts we are able to accurately categorize or judge a given bird to be a swallow or not. However, Barsalou argues that ostensibly invariant concepts are not invariant at all, but rather analytic fictions. What if, for example, a candidate creature were born wingless, or had had its wings removed. Would it automatically be excluded from consideration as a possible swallow? Would it be less of a swallow? Would it be graded, say, a 7 on a 10-point scale of swallowness? In other words, is alate (or "wingfulness") truly a defining feature? Obviously, the same logic could be applied to the concept of forked tail. And the same is true of the notion of regular migration. Suppose that at some point in the future the famous Capistrano swallows didn't return to the monastery on the right day, or at all. Would they then cease to be swallows? Moreover, even the family membership concept may be variable. It so happens that certain members of the family Micropodidae (that is, the swift family [no pun]), which resemble swallows in salient anatomical respects, are commonly referred to as swallows by ornithologists and casual birdwatchers alike. The fact that a taxonomic assignment places these birds in the swift family does not keep people from judging them to be swallows.

In (8), the category RECTANGLE is instantiated by the subordinate category "square". The so-called invariant concept which supposedly represents this (sub)category is "plane figure with 4 sides of even length joined at right angles." But when is a square not a square? Let's suppose we supplied a context of convergent lines intersecting a square, as in (8a). Is this a square? Typically, it is not perceived and

judged to be a square. Suppose further that a different set of circumstances obtained, whereby two congruent right isosceles triangles were placed together along the length of their hypotenuses. The resultant figure could be, by definition, a square -- or -- two triangles. For it to be judged a square, an individual would have to invoke, or indeed, create, a variable concept, namely, "two congruent right triangles isosceles joined along the length of their hypotenuses". A considerable amount of variability across subjects and instability within subjects would likely obtain if one manipulated contextual features. For example, in reference to 8b on the handout, if the triangles were originally separated and rotated, and then manually joined to yield the square, subjects might be less inclined to judge the figure a square than under a condition where the triangles were already joined. [note parallel to diachronic and synchronic notions of grammaticality in language] And similarly, referring to 8b and 8c, the perceived squareness of the figure may vary, depending on whether the diagonal line representing the triangles' hypotenuses is prominent--as opposed to a condition whereby the diagonal is obscured or not present at all.

Such everyday perceptual effects are of course legion. In 8e, for example, the figure on the left is clearly a circle. Some would say, however, that the figure on the right is not a circle, but a sphere.

So much for the real world. Now for the linguistic domain. In (9) on your handout, the superordinate category SENTENCE (or WELL-FORMEDNESS) is instantiated by a subordinate category of sentences where NP's have been extracted. As you know, such extractions are regulated by what Chomsky in 1964 called the A-over-A principle, and later reformulated under the rubric of the subjacency condition. Presumably, this concept and others, such as rules of phrase structure and core parameters are brought to the task of judging well-formedness (i.e., membership in the category of SENTENCE). Thus, for example, we would know that a string such as (10) *A large fell on my car* is ungrammatical, since a NOUN is obligatory in an NP. Similarly, we would know by this and by invoking avatars of the A-over-A principle, that strings like (11) *What are you cookin' on a hot?* are ungrammatical. Indeed, normally this sentence would not even generate discussion among native adult speakers of English; it's not borderline, it's just bad. And such a sentence would be bad in any language, since it violates putative universal constraints on the form of natural languages. However, those of you who have read a recent article in *Language* by Bob Wilson and Ann Peters [the title of the article is the sentence in (11)] -- you know that just this sentence and others like it were produced

by Seth, the young son of the first author (and also, incidentally, by the 7 -1/2 year old son of Barbara Partee).

I won't go into details of how Seth came to produce such sentences. It is a compelling story of how a child's congenital blindness, frequent linguistic games with the father, and the father's exceptional didactic routines seem to have conspired to engender a theoretical anomaly. Suffice it to say that within this youngster's developing grammar, sentences like *What are you cookin' on a hot?* are permissible. Mind you, they're not permitted in my grammar or in grammars of natural languages. BUT, in the course of reading and rereading this fascinating article, my opinion of such sentences began to change. While I still recognized their ill-formedness, they didn't seem as bad to me as they once had. Before reading about Seth, I would have placed such sentences among the most aberrant I'd ever heard. Now I'm more lenient. In other words, the "context" if you will of Seth's story introduced instability into my judgments of grammaticality. By the way, I am not alone in this sentiment--several of my colleagues and students have experienced similar reactions after reading the Wilson and Peters article. Words to the effect, "Hey, those sentences don't sound so bad any more." In terms of Barsalou's framework, my presumably invariant concept of A-over-A or the subjacency condition is not strictly applied. Instead, my judgment of grammaticality appeals to a variable concept, one that derives from extraordinary contextual priming--the story of Seth. As a result, the sentence is not nominally ungrammatical in my judgment, merely far down the scale.

[not talking about fuzzy grammar here, but behavioral effects. see (3) on handout]

A couple of less exotic or idiosyncratic examples may more effectively suggest the applicability of Barsalou's scheme to grammaticality judgments. In (12) and (13) on the handout are sentences that illustrate constraints on movement across PP Islands. With them are shown corresponding judgments of grammaticality by English native control subjects in a second-language acquisition study by Bley-Vroman, Felix, and Ioup. In this

study, the stimulus sentences were presented in pairs. In the first pairing, given in (12) both the A string and the B string were correctly judged by 79% of the subjects, while 18% of the subjects said that both A and B were good, and 3% got the contrast backwards. In the second pairing, given in (13), a very different pattern was observed. Only 53% got the contrast correct, while 44% said both sentences were OK. Though subjects were not asked to explain their responses in a "Think-Aloud" verbal report protocol à la Ericcson & Simon (1984), a reasonable post hoc hypothesis presents itself. Linguistically naive subjects who glance at the two sentences in (12) might perceive a certain structural similarity, namely, what are called dangling prepositions in grammar school. If they look at the two sentences in (13), however, there is more than a slight similarity. Indeed the sentences are superficially nearly identical: the constituents seem to match up almost one-for-one. A reasonable guess is that, once a subject has accepted the A sentence in (13), it is a trivial matter of analogical patterning to go ahead and accept (B), thus raising the poportion of "both OK" responses. That is, the dual considerations of (A's) acceptability and its superficial resemblance to (B) yield an ad hoc concept of what is a grammatical sentence and what is not.

In the *that*-trace examples in (14) and (15), the instability of judgments is once more documented, though the effect is somewhat weaker. This time the UNgrammatical exemplars are identical. Again, we cannot read the minds of the respondents, but I invite you to try.

Barsalou's framework can also be applied to anomalous findings in Boutet's (1986) study of 6-to-11 year-old native French speaking children. The instructions given to these subjects were "DIs-moi pour toi ça fait une phrase" ('Tell me [if] for you this makes [i.e., is] a sentence'). Curiously, nearly 30% of Boutet's subjects rejected the item in (16). *Quand ta grand-mère arrivera-t-elle?* Those subjects' explanation? The item is a question, and therefore not a sentence. The generation of such a concept to represent well-formedness is not so surprising, given that this was the only item in the corpus of stimuli that was an interrogative. Boutet's study is of further interest in that she documents a number of variable concepts such as "the words make a sentence of a good length", "sounds OK if written in a telegram", "needs a comma", which are attested as varying both across and within subjects. These concepts are similar in their variability to those often invoked by adults when judging grammaticality--such as those suggested in (9): namely, parsability, euphony, semantic appropriateness, one sentence "feels" better than another, and so forth.

The arguments I have just presented are at best sketchy and speculative. They remain to be expanded to a broad range of judgments of differing sentence types and to a variety of elicitation conditions, and have yet to be elaborated to account for other features of metalinguistic performance besides instability of grammaticality judgments. In these regards, I might mention that seed money has been granted for a large-scale study of the metalinguistic behaviors of native and near-native speakers, which takes up where Coppieters' (1987) controversial and methodologically-suspect study left off. Coppieters argues that near natives whose linguistic performance is indistinguishable from that of natives nevertheless demonstrate competence differences, as suggested by divergent grammaticality judgments. The follow-up study investigates both linguistic (competence) and non-linguistic factors that determine speakers' decision-making routines. It is hoped that eventually researchers will be able to shed light on obscure procedural aspects of individuals' grammaticality judgment routines, and that this increased understanding will help smooth the conceptual and empirical kinks out of the torturous relationship between linguisitic knowledge and performance on grammaticality judgment tasks.

ON THE INSTABILITY OF GRAMMATICALITY JUDGMENTS

AAAL Annual Meeting, 1988
David Birdsong
University of Florida

1. Who do you wanna do it?

2. Lasnik (1981: 20): "Grammaticality judgments are often incorrectly considered as direct reflections of [linguistic] competence. ... responding to a grammaticality query is an instance of [meta]linguistic *performance*." (brackets mine; italics Lasnik's)

3. cf. Rosch, Lakoff, Barsalou: Behavioral effects are not to be interpreted as a direct reflection of cognitive structure (in this case, category membership). Categories are NOT represented in the mind in terms of prototypes or best examples. Prototype effects are evidence that subjects can judge degree of prototypicality, not evidence of mental representation of categories.

4. *I shaved me.

5. I don't see how you can resist you. (Bolinger, 1968).

6. Who are you talking with?

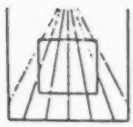
7.

CATEGORY:	BIRD[iness]
subordinate category:	swallow
"invariant" concepts:	winged animal; forked tail; regular migration; Hirundinidae family
variable concept:	capable of flight

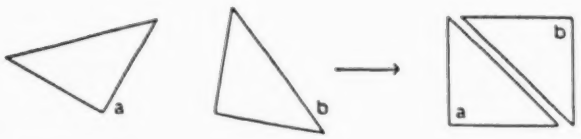
8.

CATEGORY:	RECTANGLE
subordinate category:	square
"invariant" concept:	plane figure with 4 sides of even length joined at right angles
variable concept:	2 congruent right isosceles triangles joined along the length of their hypotenuses

8a.



8b.



8c.

8d.

8e.

9. CATEGORY: SENTENCE[hood] (aka WELL-FORMEDNESS)
subordinate category: NP-extracted strings
"invariant" concepts: (constrained) A-over-A principle; S -> NP + VP; NP -> N (det, AP); core parameters (e.g., PRO-Drop)
variable concepts: OK given contextual info; easy to parse; euphonic; semantically non-anomalous

10. *A large fell on my car.

11. *What are you cookin' on a hot? (Wilson & Peters, 1988)

(Examples & data in 12-15 from Bley-Vroman, Felix & Ioup, 1988)

12. (A) Which bed does John like to sleep in?
(B) *What did Albert put money in the box during?

Judgments (%)	CORRECT	BOTH *	BOTH OK	BACKWARDS
	79	0	18	3

13. (A) Which bed does John like to sleep in?
(B) *What time will Mary arrive before?

	53	0	44	3

14. (A) What did Frank say that Judy would like to read?
(B) *What did John say that would fall on the floor, if we're not careful?

	44	0	56	0

15. (A) Who did Ellen say Mary thought would pass the test?
(B) *What did John say that would fall on the floor, if we're not careful?

	35	9	50	6

16. Quand ta grand-mère arrivera-t-elle? (Boutet, 1986)

REFERENCES

Armstrong, S. L., Gleitman, L. R., & Gleitman, H. (1983). On what some concepts might not be. *Cognition, 13,* 263-308.

Barsalou, L. W. (1987). The instability of graded structures: Implications for the nature of concepts. In U. Neisser (Ed.), *Concepts and conceptual development: Ecological and intellectual factors in categorization* (pp. 101-140). Cambridge: Cambridge University Press.

Bialystok, E., & Ryan, E. B. (1985). A metacognitive framework for the development of first and second language skills. In D. L. Forrest-Pressley, G. E. MacKinnon, & T. G. Waller, (Eds.), *Metacognition, cognition, and human performance* (pp. 207-252). Orlando: Academic Press.

Birdsong, D. (1989). *Metalinguistic performance and interlinguistic competence.* Berlin and New York: Springer-Verlag.

Bley-Vroman, R., Felix, S. W., & Ioup, G. I. (1988) The accessibility of universal grammar in adult language learning. *Second Language Research.*

Bolinger, D. (1968). Judgments of grammaticality. *Lingua, 21,* 34-40.

Boutet, J. (1986). Jugements d'acceptabilité et raisonnements métalinguistiques. *Etudes de Linguistique Appliquée, 62,* 40-58.

Carden, G. (1970). Discussion of J. T. Heringer, "Research on quantifier-negative idiolects". In *Papers from the Sixth Regional Meeting of the Chicago Linguistic Society* (p. 296). Chicago: Chicago Linguistic Society.

Carroll, J. M., Bever, T. G., & Pollack, C. R. (1981). The non-uniqueness of linguistic intuitions. *Language, 57,* 368-382.

Coppieters, R. (1987). Competence differences between native and near-native speakers. *Language, 63,* 544-573.

Chomsky, N. (1965). *Aspects of the theory of syntax.* Cambridge, MA: MIT Press.

Ericsson, K. A., & Simon, H. A. (1984). *Protocol analysis: Verbal reports as data.* Cambridge, MA: MIT Press.

Hill, A. A. (1961). Grammaticality. *Word, 17,* 1-10.

Labov, W. (1975). *What is a linguistic fact?* Lisse: Peter de Ridder.

Lakoff, G. (1987). Cognitive models and prototype theory. In U. Neisser (Ed.), *Concepts and conceptual development: Ecological and intellectual factors in categorization* (pp. 63-100). Cambridge: Cambridge University Press.

Lasnik, H. (1981). Learnability, restrictiveness, and the evaluation metric. In C. L. Baker & J. J. McCarty, (Eds.), *The logical problem of language acquisition* (pp. 1-29). Cambridge, MA: MIT Press.

Levelt, W. J. M. (1974). *Formal grammars in linguistics and psycholinguistics. Volume III: Psycholinguistic applications.* The Hague: Mouton.

McCauley, R. N. (1987). The role of theories in a theory of concepts. In U. Neisser (Ed.), *Concepts and conceptual development: Ecological and intellectual factors in categorization* (pp. 288-309). Cambridge: Cambridge University Press.

McCawley, J. D. (1985). [Review of *Grammatical theory: Its limits and possibilities*]. *Language, 61,* 668-679.

Nagata, H. (1988). The relativity of linguistic intuitions: The effect of repetition on grammaticality judgments. *Journal of Psycholinguistic Research, 17,* 1-17.

Neisser, U. (Ed.). (1988). *Concepts and conceptual development: Ecological and intellectual factors in categorization.* Cambridge: Cambridge University Press.

Newmeyer, F. (1983). *Grammatical theory: Its limits and its possibilities.* Chicago: University of Chicago Press.

Peters, P. S., & Ritchie, R. (1973). On the generative power of transformational grammars. *Information Sciences, 6,* 49-83.

Snow, C., & Meijer, G. (1977). On the secondary nature of syntactic intuitions. In S. Greenbaum (Ed.), *Acceptability in language* (pp. 163-177). The Hague: Mouton.